

those whose names are given in the provisional list as vice-presidents and officers of the British Science Guild be elected in those capacities and asked to serve."

This list is as follows:—

Vice-presidents: The Right Hon. the Lord Mayor of London, Sir Lawrence Alma-Tadema, O.M., R.A., the Right Hon. Lord Alverstone, G.C.M.G., F.R.S., Lord Balcarras, M.P., the Right Hon. the Earl of Berkeley, Admiral Sir Cyprian Bridge, G.C.B., Sir William Broadbent, Bart., K.C.V.O., F.R.S., Sir Walter Buller, K.C.M.G., F.R.S., Sir J. Burdon-Sanderson, Bart., F.R.S., Major-General Sir Owen Tudor Burne, G.C.I.E., K.C.S.I., the Right Hon. Joseph Chamberlain, M.P., F.R.S., Sir William Church, Bart., K.C.B., Sir George Sydenham Clarke, K.C.M.G., F.R.S., Sir John Colomb, K.C.M.G., M.P., the Right Hon. the Earl of Donoughmore, the Right Hon. Earl Egerton of Tatton, Sir John Eliot, K.C.I.E., F.R.S., Sir Michael Foster, K.C.B., M.P., F.R.S., the Right Hon. Sir Edward Fry, F.R.S., Sir Archibald Geikie, F.R.S., Mr. F. Du Cane Godman, F.R.S., the Right Hon. Sir John Gorst, K.C., M.P., F.R.S., the Right Hon. Lord Haliburton, G.C.B., Sir Joseph Hooker, G.C.S.I., F.R.S., Sir Alfred Jones, K.C.I.E., the Right Hon. Viscount Knutsford, G.C.M.G., Prof. Ray Lankester, F.R.S., Dr. J. Larmor, F.R.S., Mr. C. W. Macara (president of Federation of Master Cotton Spinners' Associations), Sir Charles McLaren, Bart., K.C., M.P., the Right Hon. Sir Horace Plunkett, K.C.V.O., F.R.S., the Right Hon. Lord Rayleigh, O.M., F.R.S., Prof. Rhys, the Lord Bishop of Ripon, Mr. E. Robertson, K.C., M.P., the Right Hon. Lord Tennyson, P.C., G.C.M.G., Sir Philip Watts, K.C.B., F.R.S., His Grace the Duke of Wellington, K.G., G.C.V.O., Sir John Wolfe-Barry, K.C.B., F.R.S.; *chairman of committees:* Sir Norman Lockyer, K.C.B., F.R.S.; *vice-chairmen:* Sir William Abney, K.C.B., F.R.S., Sir Lauder Brunton, F.R.S., the Right Hon. Sir John Cockburn, K.C.M.G., Sir Gilbert Parker, M.P.; *trustees:* the Right Hon. Lord Strathcona and Mount Royal, G.C.M.G., Sir Henry Roscoe, F.R.S.; *hon. treasurer:* the Right Hon. Lord Avebury, F.R.S.; *hon. assist. treasurer:* Lady Lockyer, 16 Penywern Road, S.W.; *hon. secretary:* Mr. C. Cuthbertson, *pro tem.*

Admiral Sir Cyprian Bridge seconded the motion. In doing so he said that the officers of the Japanese navy had frequently mentioned to him the satisfaction it was to them, and the benefit it had been to them, to have been brought up by officers of the British Navy.

The resolution was agreed to.

Sir J. Wolfe Barry moved:—"That the president, vice-presidents, and officers and the other members of the Guild mentioned in the provisional list be elected members of the general committee of the Guild." He said that the movement must be looked upon as an educational movement, to educate the people at large and the Government and political parties not to undervalue the great resources of science in the development of the kingdom. Much had been done, and he had only to look back on the progress of the nineteenth century to see how leading a part science had taken in the development of the nation. But everybody must admit that we must not rest and be thankful for what had been done. An immense amount remained. This country must not stand still. It had the most vigorous competitors, who brought all the product of science into the contest which they waged against us in so many industrial and social ways. The business of that guild would be, he thought, to urge everybody to go forward in hope, and we must not suffer ourselves to be left behind by the development of other nations from whom we might learn much. At the same time, he firmly believed that this country had nothing to fear if only it were true to itself.

Major-General Sir J. F. Maurice seconded the resolution, which was passed.

Sir W. Ramsay moved a vote of thanks to the Lord Mayor. In doing so he said that in England we had a great deal of scientific ability. Much of it was organised, but its application to the affairs of the State, to the Army, to the Navy, to the service of the nation

at large, could be very much better organised than it was. The object of that guild was to attempt to effect that organisation, which was so much required. If that was so he was sure they would all agree that to promote the object of that guild was one of the most important tasks which the nation could undertake. He hoped they would all unite to promote that object and gain adherents for the guild, with the result that before many years we should be less of a disorganised rabble and more of an organised army than we were now.

Dr. Robert Caird seconded the motion, which was heartily carried.

NOTES.

We regret to announce that Prof. Ralph Copeland, Astronomer-Royal for Scotland and professor of astronomy in the University of Edinburgh, died on October 27, at sixty-eight years of age.

CAPTAIN F. W. HUTTON, F.R.S., curator of the Canterbury Museum, Christchurch, New Zealand, and president of the New Zealand Institute, died on October 27 while returning home by the R.M.S. *Rimutaka* at the conclusion of a visit to England. He was sixty-eight years of age, and was elected a Fellow of the Royal Society in 1892.

AN interesting gathering of the old pupils of Mr. Francis Darwin, F.R.S., formerly reader in botany, was held in the botany school of the University of Cambridge on October 28, when his portrait, by Mr. W. Rothenstein, was presented to the botanical department by a body of subscribers, all formerly his pupils. To Mr. Darwin himself was presented a handsome book containing autographs of his pupils. Speeches were made by members of the staff and by other botanists regretting the severance, after twenty-one years, of Mr. Darwin's connection with the botanical department.

At a meeting of the general committee of the British Association held on Tuesday, Leicester was adopted as the place of meeting of the association in 1907 by the following resolution, which was passed unanimously:—"That having regard to the fact that no meeting of the Association has as yet been held in Leicester, the general committee decides to accept the cordial invitation from that town, and at the same time expresses its most hearty appreciation of the kind and courteous invitation from the city of Dublin, and ventures to express the hope that the invitation may be renewed at an early date."

ON Monday, October 30, a strong earthquake shock, lasting four seconds, was recorded at Catanzaro in the afternoon; and two earthquake shocks, one rather marked and the other slight, were observed at Monteleone in the evening.

We have received a letter from Dr. Faulds in which he replies to the review of his book on October 19 (supplement, p. iv). The more important part of his letter lies in the assertion that he *had* devised a method of classifying finger-prints. Where can an exact description of his method be found? His book contains only generalities about it, and his present letter goes no further.

At the annual general meeting of the Royal Society of Edinburgh, held on October 23, the following officers and members of council were elected:—*President*, the Right Hon. Lord Kelvin, G.C.V.O., F.R.S.; *vice-presidents*, Hon. Lord M'Laren, Prof. Flint, Dr. R. Munro, Sir John Murray, K.C.B., F.R.S., Dr. R. H. Traquair, F.R.S., Prof. Crum Brown, F.R.S.; *general secretary*, Prof. George Chrystal; *secretaries to ordinary meetings*,

Prof. D. J. Cunningham, F.R.S., Dr. C. G. Knott; *treasurer*, Mr. P. R. D. Maclagan; *curator of library and museum*, Dr. Alex. Buchan, F.R.S.; *councillors*, Prof. Andrew Gray, F.R.S., Dr. R. Kidston, F.R.S., Dr. D. Noël Paton, Prof. John Chiene, C.B., Prof. J. Graham Kerr, Dr. W. Peddie, Dr. L. Dobbin, Prof. J. C. Ewart, F.R.S., Dr. B. N. Peach, F.R.S., Dr. J. J. Dobbie, F.R.S., Prof. G. A. Gibson, Prof. J. P. Kuenen.

AN International Fisheries Exhibition, to include everything connected with the sea—either oceanographical or sea fisheries business—will be held at Marseilles under official control from April to October, 1906. The oceanographical part of the exhibition will illustrate the work of the principal biological societies, marine zoological laboratories, and similar institutions. The investigations of the Prince of Monaco will occupy a large room, and France, Germany, Portugal, the Netherlands, Norway, Sweden, America, Japan, and England will have separate spaces allotted to them. The practical and industrial side of fisheries in many parts of the world, as well as the products of the sea, will be represented. Applications for space will be received up to January 15, 1906, by the agents, Exposition de Marseille, 5 rue des Mathurins, Paris, who will also supply any further information required.

MAJOR-GENERAL SIR CHARLES WILSON, K.C.B., F.R.S., died on October 25 at Tunbridge Wells in his seventieth year. Trained as a soldier, his aptitude for work outside the routine of regimental duty soon led to his appointment in directions in which his scientific attainments could be utilised. In 1858, when he was but twenty-two years of age, he was appointed secretary to the North American Boundary Commission. From 1864-6 he was engaged on surveys of Jerusalem and Palestine, and for two years after this with the Ordnance Survey of Scotland, when he again left home to undertake the survey of Mount Sinai. This piece of work was followed by seven years as the director of the topographical department of the War Office. From 1876 to 1878 he was engaged on the Ordnance Survey of Ireland, and from 1886 to 1894 Sir Charles Wilson was the director-general of the Ordnance Surveys at headquarters. He was elected a Fellow of the Royal Society in 1874, and was twice president of the geographical section of the British Association, in 1874 at Belfast and in 1888 at Bath. He served as a vice-president of the Royal Geographical Society from 1897-1902. He was the author of several works on those countries in the east where his surveying work was done, in addition to one or two well known guide-books. It is interesting, in view of the attention given in recent years to the claims of geography to be included in the subjects required of army officers, to remember that Sir Charles Wilson, in his British Association address in 1874, spoke of the influence which the physical features of the earth's crust have on the course of military operations, and of the consequent importance of the study of physical geography to all those who have to plan or take part in a campaign.

A MEMORIAL bust of the late Dr. Joule was unveiled on October 28 at Sale, near Manchester. The ceremony was performed by Sir William Bailey, president of the Manchester Literary and Philosophical Society, who delivered an address. In the course of his remarks, Sir William Bailey said that Joule was born in New Bailey Street, Salford, in the year 1818. He studied under Dalton, who advised Joule's father to send him, on the completion of his studies, to Sturgeon, the inventor of the soft iron

magnet.* Under his instruction Joule became a competent electrician, and the inventor of electric welding. Mr. Denny Lane was at the British Association meeting at Cork in 1843 when Joule read his first paper on the "Mechanical Equivalent," and he assisted Dr. Joule to drum up an unwilling audience of six people, of which he was one. Sir William Bailey compared, in one part of his address, the coal consumption from the year 1840 to the present day. In 1840 the *Britannia*, 740 horse-power, Cunarder, used more than 4½ lb. of coal, in 1862 the *Scotia* used 3¼ lb., in 1881 a steamboat used 2 lb., and to-day the lowest consumption is 1 lb. per horse-power per hour; much of this economy may fairly be credited to knowledge of the mechanical equivalent. There are about 13,500 British thermal units in a pound of good coal, and if there is no loss in consuming it there would be a power equal to five horses obtained from it; but engineers know that the best engines under the most scientific conditions and skilful attention with boilers under the most skilled superintendence only give a duty of 1 horse-power for 1 lb. of coal. Joule invented electric welding in 1855. With a battery of six Daniel cells he succeeded in fusing steel wires and uniting steel, brass, and platinum to iron. Again, his experiments proved that it takes ¾ lb. of zinc to fuse 1 lb. of iron. Some portion of Joule's library and apparatus is at the Manchester Technical School.

THE sixth annual Huxley lecture of the Anthropological Institute was delivered on Tuesday, October 31, by Dr. John Beddoe, F.R.S., ex-president of the institute; the chair was taken by Prof. Gowland. The lecturer chose as his subject "Colour and Race," and dealt mainly with the problems of Central Europe and the British Isles. After asserting the right of pigmentation to a high place among somatological data, Dr. Beddoe traced the history of the colour question, maintaining the correctness of his own methods as against those of Virchow and others; he showed, incidentally, that the latter gave incorrect results in certain areas. After adverting to the influence of heat, humidity, and various kinds of disease in causing selection of brunettes in certain localities, he passed on to explain in detail pigmentation maps of Central Europe which he had prepared; fairness was shown to increase from south to north, both in Europe and the British Isles, but it was open to question whether in the latter case historical rather than climatic grounds were not mainly operative. On the map of Ireland the traces of invading races were strongly marked; but in England the Saxons had not exterminated the preceding races, as was sometimes imagined. In conclusion, the lecturer asserted the probability of a change in the direction of dark pigmentation in this country, due to the predominant influence of the proletariat. The Huxley memorial medal was then presented to the lecturer by the president, and suitably acknowledged by the recipient.

IN an interesting article in the *Times* (October 28), some of the current theories on the ætiology of the disease known as "beri-beri" are reviewed. That of Dr. Hose, which ascribes the disease to the consumption of mouldy rice, is considered to accord with the facts better than any other. It must, however, be admitted that in the opinion of those best qualified to judge, this dietetic theory cannot be maintained. At the same time, it would be well, in the present state of our knowledge, to examine critically all theories, and it is stated that experiments are being made at Cambridge, under Prof. Sims Woodhead's direction, to test the truth or otherwise of Dr. Hose's theory.

At a largely attended meeting of the Brighton and Sussex Medico-Chirurgical Society held at Brighton on October 27, Sir Frederick Treves gave an address on the Army Medical Service. He pointed out that in the South African campaign the admissions to hospital were 746 per 1000 on account of disease, and only 34 per 1000 for wounds. Our present medical department is totally inadequate, and a sufficient reserve must be created. Sir Frederick concluded by pointing out what appeared to him to be needed to make the Army Medical Service as perfect as possible. The points were:—(1) The Director-General should be the head of his department and be responsible for its efficiency and economical administration; (2) he should have direct access to the Army Council and Secretary of State; (3) he should have control of the money voted for the medical service; (4) the service remaining, as at present, "under the supervision of the Advisory Board"; (5) an efficient Army Medical Reserve should be formed; (6) the combatant officer should have some knowledge of hygiene as applied to campaigning and barrack life, and a like knowledge, of a still more elementary character, should be possessed by the private soldier; (7) the Army medical officer should be vested with such authority and provided with such *personnel* as would enable him to carry out those sanitary arrangements in the field which experience had proved to be absolutely essential to secure the *minimum* loss of life from disease.

DR. J. HUBER, of Pará, has sent us a separate copy of his paper on the formation of colonies in the ant *Atta sexdens*, from the *Biol. Centralblatt*, to which brief reference has already been made in these columns.

THE annual report of the Geological Survey of New Jersey for 1904 includes an illustrated account by Mr. C. R. Eastman of the Triassic fish-fauna of New Jersey, pre-faced by a general popular dissertation on fossil fishes. This Triassic fish-fauna is singularly limited but remarkably constant throughout the eastern United States, from Virginia northwards, comprising only half a dozen generic types, of which four are severally represented only by a single species.

WE have received five numbers of the *Proceedings of the U.S. Nat. Museum*, the contents of four of which are devoted to the invertebrate faunas of America and the Philippines. New generic types of South American moths are discussed by Mr. H. G. Dyar in No. 1419, while other new forms of the same are described by Mr. W. Warren in No. 1421. A revision of North American fleas, by Mr. C. F. Baker, forms the subject of No. 1417, in which the author directs attention to the circumstance that fleas infesting rats in the tropics are more near akin to those which attack man than is the case with the rat-fleas of cooler climates, and to the bearing of this fact on the propagation of plague. Hymenoptera from the Philippines form the subject of No. 1424; while in No. 1425 Mr. W. H. Dall discusses the "Universal Conchologist" of Thomas Martyn, published in 1784, and the value of the technical names employed therein.

MUCH interesting information with regard to scientific progress in India will be found in the report of the Madras Government Museum and Connemara Public Library for 1904-5, drawn up by Mr. E. Thurston, who recently returned to his charge after a period of furlough in this country. The scheme for a systematic ethnographical survey of India, recently sanctioned by the Government, enters largely into this report, Mr. Thurston pointing out the difficulties connected with making such a survey in a country of the size of India, and referring

to the somewhat unsatisfactory nature of the replies received from some of those who have undertaken to fill up papers connected with the subject. The museum is fortunate in having acquired the valuable series of pre-historic objects collected by Mr. R. B. Foote, late of the Indian Geological Survey, during his long residence in Madras. It may interest numismatists to learn that certain ancient lead coins kept in a wooden cabinet enclosed in an iron safe were found to be reduced to powder, the metal having been converted into carbonate.

WE have received separate copies of two papers by Francis Baron Nopcsa, the one from the *Geological Magazine* for July, and the other from the *Annals and Magazine of Natural History* of the same date. In the former the author describes, with a restored figure, a large portion of the skeleton of a large carnivorous dinosaur from the Oxford Clay of Oxford in the collection of Mr. J. Parker of that city. In place of referring this splendid specimen to the well known genus *Megalosaurus*, Baron Nopcsa considers that it indicates a genus apart, and he identifies it with *Streptospondylus*, typified by a few vertebræ and limb-bones in the Paris Museum from the Kimeridgian of Havre. Among other peculiarities, the Oxford dinosaur is stated to differ from *Megalosaurus* in possessing four (in place of three) hind-toes. It may be mentioned in this connection that Phillips, in his description of the typical species of the last named genus, expressly stated that he was uncertain whether there might not have been a fourth hind-toe. In the second paper the author gives a new interpretation of the problematical fossil *Kerunia*, from the Egyptian Eocene, which has been referred by one authority to a cephalopod and by a second to a hydractinian polyp. According to the author, both these authorities were to a certain degree right, for he regards *Kerunia* as a hydractinian in which a cephalopod took up its residence (symbiosis). The union of the two organisms was apparently so intimate that while the encrusting zoophyte undertook the construction of the shell of the mollusc, the latter controlled to a certain extent the growth of the zoophyte.

A RETURN has been published, we learn from the *Pioneer Mail*, regarding the measures adopted for the extermination of wild animals and venomous snakes during the year 1904. The total mortality among human beings reported to have been caused by wild animals was 2157, against 2749 in 1903. The most noticeable decrease occurred in Madras and the United Provinces, namely, from 438 and 404 in 1903 to 237 and 193 in 1904 respectively. In the Central Provinces (including Berar), also, there was an appreciable decrease—from 470 to 351. The destruction of human life by tigers in 1904 was smaller than in the previous year, the number being 786 against 866. As usual, the greatest mortality occurred in Bengal. The year's returns show a marked decline in the number of deaths caused by wolves—from 463 in 1903 to 244 in 1904, the decrease occurring principally in the United Provinces, where the mortality from this cause fell from 278 to 90. It is pointed out that the number of wolves destroyed in the United Provinces has fallen from more than 1200 in each of the years 1902 and 1903 to 650 in 1904; and the belief is expressed that this points to a genuine decrease in their numbers. The mortality from snake-bite rose from 21,827 to 21,880. It is reported that in the Seoul district of the Central Provinces anti-venin was used with success in two cases, and the question of introducing more generally the treatment of snake-bite by potassium permanganate is under the consideration of the local Government. The total number of snakes killed was 65,378.

DR. L. COCKAYNE contributes a short article on the far north of New Zealand to the *Young Man's Magazine* (August 1). The narrow strip of land lying north of the thirty-fifth parallel is for the most part a barren waste traversed by a few diggers of kauri gum. A belt of mangroves lines the estuary in Rangaumu Bay, and about North Cape are found the purple-flowered composite, *Cassinia amoena*, the crimson-flowered *Veronica speciosa*, and the curious leafless parasite *Cassythia paniculata*. Especially interesting is the Reinga, a rocky mass jutting out into the sea, whence, according to Maori lore, the Maori spirits took their final leap into the unseen world.

It is interesting to find, as noted in the *Agricultural News* (September 9), that the new Barbados varieties of sugar-cane, known as B208 and B147, have yielded good results in Queensland; the latter seems to be especially hardy and proof against fungoid attacks. A remedy is suggested in connection with an unsatisfactory shipment of mangoes that the decay which is caused by fungi or bacteria acting on the bruised surface of the fruit may be in some measure prevented by immersion in a weak solution of formalin; it is said that with due precaution the formalin does not spoil even such delicate fruit as strawberries.

At the beginning of this year an improvement was effected in the general style of the *Indian Forester*, and now, owing to the departure of two members of the controlling committee, a more permanent arrangement for a board of management, presided over by the Inspector-General of Forests, has been established. Mr. E. P. Stebbing, who continues to act as editor, discusses in the August number the *pros* and *cons* of fire protection in teak forests, and concludes with the recommendation to consider how fires can be controlled so as to yield the maximum benefit with a minimum of damage. He also furnishes the life-history of a cecidomyid fly which produces galls or pseudo-cones on *Pinus longifolia*. Mr. E. M. Hodgson presents an interesting account of the arrangements for fire protection in the Mandui range, Surat district.

IN Bulletin No. 26, Bureau of Government Laboratories, Manila, Dr. Richard Strong gives an admirable survey of the clinical and pathological significance of the *Balantidium coli*, a protozoon parasitic in man and swine, and causing diarrhoea and pseudo-dysentery.

THE contents of the *Bulletin of the Johns Hopkins Hospital* for October (xvi., No. 175) are chiefly devoted to medical subjects, but include an interesting summary of our present conceptions as to the cause of the heart beat by Mr. E. G. Martin.

THE *Journal of Anatomy and Physiology* with the October number commences its fortieth volume, and Sir William Turner, F.R.S., who has been an associate editor since its foundation, contributes a preface. The size of the page has been much enlarged, which, it is hoped, will be more advantageous for the reproduction of drawings. The number contains ten important articles and several excellent plates.

THE papers in the October number of the *Journal of Hygiene* (v., No. 4) maintain a high standard. Among others, Dr. H. S. Willson writes on a new process for the isolation of the typhoid bacillus from water by means of precipitation with alum, Mr. Crofton on anti-bacterial sera, Mr. de Korté on a sarcosporidium of a monkey, Dr.

Graham-Smith on a piroplasma parasite of the mole, Dr. Nuttall on the prevalence of anopheles, Dr. Harden on the chemical action on glucose of the lactose-fermenting organisms of fæces, and Dr. Haldane on the influence of high air temperatures.

ATTENTION is directed in the *Engineering and Mining Journal*, of New York, to the remarkable developments at Mount Morgan, Queensland, whereby the mine of that name is being converted from a great gold mine into a copper mine. Diamond-drill borings have revealed large bodies of copper gold ore below the previous openings in the gold ore sufficient to warrant the erection of smelting works capable of treating 10,000 tons of ore monthly.

At the first meeting of the autumn session of the Institution of Mechanical Engineers, an interesting paper on the manufacture of cartridge-cases for quick-firing guns, by Colonel L. Cubillo and the late Mr. A. P. Head, was submitted. The object of the paper was to describe the new plant recently completed at the Royal Spanish Arsenal at Trubia, Spain, for the manufacture of brass cartridge-cases from 3 inches to 6 inches in diameter.

A STRIKING photograph is reproduced in *Engineering* of October 27 showing the extraordinary erosive effect of the discharge from the Assouan dam. The whole of the water of the Nile passes through sluices in the face of the dam. These sluices are at different heights so that water is never discharged under a head of more than 29.5 feet, which limits the velocity of discharge to less than 35 feet per second. Even at this velocity, however, the water has proved capable of lifting a boulder, weighing more than 60 tons, out of its natural bed in apparently solid rock, and hurling it back against the dam.

THE following method, requiring only a scale and a pair of dividers, for the measurement of angles is given in the *Engineer*. Suppose the length of an arc of 90° to be 90 mm., the length of the radius of the corresponding arch will be $180/\pi = 57.3$ mm. Every millimetre, therefore, measured as an arc struck with this radius corresponds to an angle of 1° . For example, if an angle of 33° is required, describe an arc of 57.3 mm. radius and mark off upon it with a pair of dividers 10 mm. three times, and finally 3 mm. for the odd 3° . The method is equally applicable to British measures if the standard radius is taken at 5.73 inches, when the degree corresponds to one-tenth of an inch.

THE October issue of the *Journal of the Franklin Institute*, of Philadelphia, contains an account of the invention and development of the telautograph. Electric transmission of handwriting has received attention ever since telegraphic transmission of printed characters was effected. Prof. Elisha Gray exhibited a telautograph at Chicago in 1893, but cost and difficulty of manufacture led to its abandonment. The instrument has been brought to its present state chiefly through the experimental work of Mr. G. S. Tiffany. It is a variable current instrument with several interesting features, including what may be termed a straight line D'Arsonval movement, which is used to work the receiver. A large number of private line telautographs are now in actual use in the United States.

IN a series of papers in the *Proceedings of the Royal Society of Victoria* (n.s., vol. xviii., part i., August) Messrs. Thiele, Chapman and Hall add to the knowledge of the Palæozoic rocks and fossils of Gippsland. A series of graptolites, including both some new forms and several

well known British species, mark the Ordovician age of certain black slates; a new species of *Receptaculites* comes from Silurian rocks, while some Devonian fossils are re-described.

THE frequent association of the acid igneous rock granophyre with the basic gabbro has attracted the attention of many geologists, and two explanations have been offered—(1) that the two rocks have been differentiated, during slow consolidation, out of a uniform magma of intermediate composition; and (2) that one of them represents the unaltered original magma, while the other has been formed by part of it absorbing and assimilating foreign material. Mr. R. A. Daly, of the International Boundary Commission, describes (*Amer. Journ. Sci.*, 4th ser., vol. xx., No. 117, September) cases he has observed in British Columbia and elsewhere which appear to him to prove conclusively the second theory to be correct. Gabbro-sills, intrusive in a quartzite, have been converted into an acid rock along the upper contact by absorption of silica from the quartzite, the other rock constituents retaining very nearly their original proportions.

WE have received the report on rainfall registration in Mysore for 1904 prepared by Mr. J. Cook, director of meteorology in that province; it contains valuable statistics relating to the seasonal and geographical distribution over that extensive area. The number of Government stations is now 201; but with regard to a few of the stations the director has to lament culpable inattention on the part of the officials concerned, who have allowed the gauges to lie for months without being suitably fixed. Among the heavy falls in twenty-four hours may be specially mentioned 20.67 inches in June, in the Shimoga district, and 13.70 inches in July, in the Kadur district. The geographical distribution is plainly exhibited by two maps, one for the year 1904, and another showing the average for thirty-five years, 1870–1904; the abnormality of the distribution owing to the failure of the north-east monsoon rains is strikingly represented. The thirty-five years' average for the whole province is 37.12 inches; the average for the Kadur district is 74.26 inches, and for the Chitaldrug district 21.46 inches.

PROF. STOUT's paper on "Things and Sensations," read to the British Academy in May, has been published by Mr. Henry Frowde. Prof. Stout maintains that the problem for philosophy is not, Is there an external world? but *What* is the external world, and how do we know it? He points out that in one aspect the thing and its sensible appearance are regarded as entirely one, and in another aspect as separate and independent. He rejects the solution that the sensible appearance is merely the thing itself appearing, examines hastily but suggestively the views of Locke and Kant, and comes to the conclusion that there is an actual existence other than sensation. This he calls the independent not-self, and he describes it as not unknowable and as not matter, but only one constituent of the complex unity which we call matter. In the concluding section of his admirable essay he argues that we must apprehend this independent not-self as another self, or as a partial aspect of another self more or less like our own.

THE fifth volume of the new series of the *Proceedings of the Aristotelian Society* has been published by Messrs. Williams and Norgate at 10s. 6d. net. The volume includes the papers read before the society during the session 1904–5, an abstract of minutes of the proceedings, and the report of the executive committee.

NO. 1879, VOL. 73]

THE first two parts of a "Three Years' Course of Practical Chemistry," by Messrs. George H. Martin and Ellis Jones, science masters of the Bradford Grammar School, have been published by Messrs. Rivingtons at 1s. 6d. each. The second part, dealing with the work of the second year of the course, was originally published privately, and was reviewed in our issue for December 1, 1904 (vol. lxxi. p. 100). An introduction to each volume has been provided by Prof. J. B. Cohen.

AMONG the articles in the current number of the *Quarterly Review* is one dealing with the aborigines of Australia, written by Mr. Andrew Lang. This article reviews the work of the chief observers of the primitive peoples of Australia, examining exhaustively the researches of Mr. A. W. Howitt, Mr. F. J. Gillen, and Prof. Baldwin Spencer. Mr. Lang differs from all these on some points of theory, though he is profuse in his admiration of the matter and manner of their work, except as regards linguistic and philological research. The hypothesis put forward by Mr. Lang is the converse of that apparently entertained by Messrs. Spencer and Gillen. To quote the concluding paragraph of the article:—"they probably regard the Arunta lack of religion as primitive, just as they think the totemism of the Arunta most archaic. They do not indulge in the comparative method in either case; and it is the comparative method that leads us to our conclusions." The same number of the review contains an article on food supply in time of war.

OUR ASTRONOMICAL COLUMN.

ASTRONOMICAL OCCURRENCES IN NOVEMBER:—

- Nov. 3. 13h. 35m. to 14h. 56m. Transit of Jupiter's Sat. III. (Ganymede).
 ,, 5. 10h. 59m. to 12h. 4m. Moon occults σ Aquarii (mag. 4.8).
 ,, 9. 15h. 52m. to 16h. 51m. Moon occults ν Piscium (mag. 4.7).
 ,, 13. 6h. 35m. to 7h. 16m. Moon occults α Tauri (mag. 1.1).
 ,, 13. 9h. 7m. Minimum of Algol (β Persei).
 ,, 14–16. Epoch of Leonid shooting stars (Radiant $151^{\circ} + 23^{\circ}$).
 ,, 15. Venus. Illuminated portion of disc = 0.930. Of Mars = 0.879.
 ,, 16. 5h. 56m. Minimum of Algol (β Persei).
 ,, 17–21. Epoch of Andromedid shooting stars, with probable maximum November 18 (Radiant $25^{\circ} + 43^{\circ}$).
 ,, 20. Saturn. Major axis of ring = $39''.62$, Minor axis = $7''.88$.
 ,, 23. 21h. Jupiter in opposition to the Sun.
 ,, 24. 18h. Venus in conjunction with the Moon. Venus $3^{\circ} 42' S$.
 ,, 26. 17h. Mercury at greatest elongation, $21^{\circ} 41' E$.
 ,, 27. 18h. Mercury in conjunction with the Moon. Mercury $6^{\circ} 33' S$.

WAVE-LENGTHS OF SILICIUM LINES.—Because of their especial utility in radial-velocity determinations, Prof. Frost and Mr. J. A. Brown have re-measured the wave-lengths of the silicium lines at $\lambda\lambda$ 4553, 4568, and 4575, which were simultaneously identified by Sir Norman Lockyer and Mr. Lunt, and designated "group iii." by the former observer.

The three spectra measured in this new determination were obtained by passing a strong spark between poles containing metallic silicium and titanium, the sharp titanium lines providing useful standards of wave-length in the subsequent calculation. As a titanium line occurs near enough to the silicium line at λ 4553 to interfere with the measures of the latter, only those photographs were used on which the faintness of the other titanium lines showed that this possible source of error might be neglected.

As a result of this research the following values were obtained for the wave-lengths sought:— λ 4552.64,